CHAPTER 1

# Product Overview

The Cisco Catalyst Switch Module 3110G, 3110X, and 3012 for IBM BladeCenter—referred to as the *switch modules*—are Ethernet switch modules that you install in an IBM BladeCenter enclosure—referred to as the *blade enclosure*. You can connect devices to the switch modules for connections to other network devices such as routers, servers, and other switches.

The Catalyst Switch Module 3110G and 3110X support stacking through Cisco StackWise Plus technology. The Catalyst Switch Module 3012 does not support stacking. Unless otherwise noted, the term *switch module* refers to a standalone switch module and to a switch stack.

**Note** This product is not intended to be connected directly or indirectly by any means whatsoever to interfaces of public telecommunications networks.

This chapter provides a functional overview of the switch modules and covers these topics:


- Switch Modules, page 1-1
- Hardware Features, page 1-2
- Management Options, page 1-9


## Switch Modules

Table 1-1 describes the switch modules.

*Table 1-1 Catalyst Switch Module 3110G, 3110X, and 3012*

| Switch Model | Cisco Part Number | IBM Part Number | Description |
|---|---|---|---|
| Catalyst Switch Module 3110G | WS-CBS3110G-S | WS-CBS3110G-S-I | 4 external 10/100/1000BASE-T Ethernet ports, 14 internal 1000BASE-X Ethernet downlink ports, 1 internal 100BASE-T Ethernet management port, 2 StackWise Plus ports |

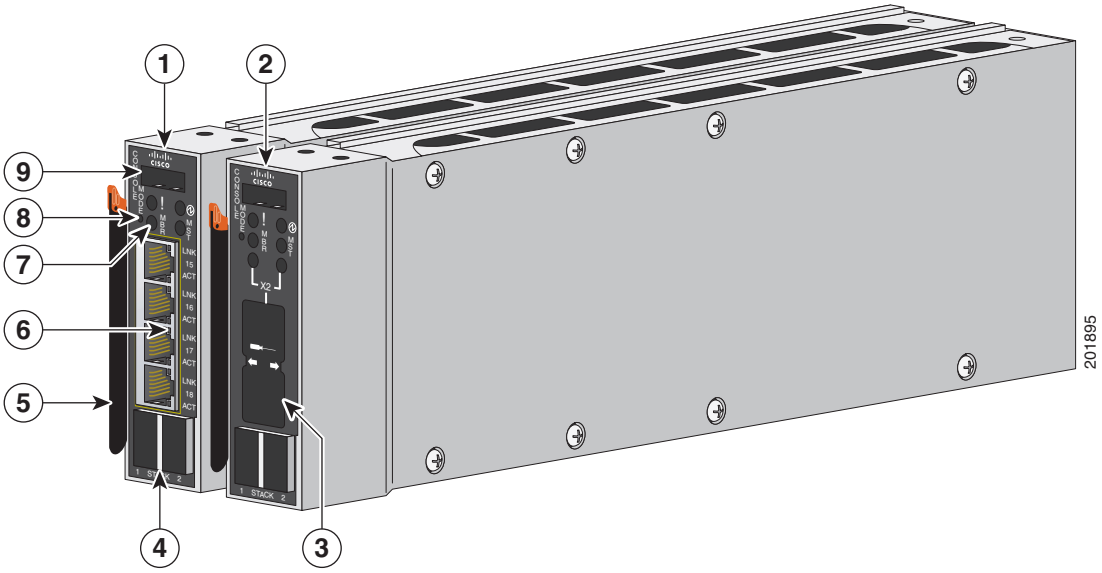
*Table 1-1 Catalyst Switch Module 3110G, 3110X, and 3012 (continued)*

| Switch Model | Cisco Part Number | IBM Part Number | Description |
|---|---|---|---|
| Catalyst Switch Module 3110X | WS-CBS3110X-S | WS-CBS3110X-S-I | 1 external 10-Gigabit Ethernet module slot, 14 internal 1000BASE-X Ethernet downlink ports, 1 internal 100BASE-T Ethernet management port, 2 StackWise Plus ports |
| Catalyst Switch Module 3012 | WS-CBS3012-IBM | WS-CBS3012-IBM-I | 4 external 10/100/1000BASE-T Ethernet ports, 14 internal 1000BASE-X Ethernet downlink ports, 1 internal 100BASE-T Ethernet management port |

# Hardware Features

The Catalyst Switch Module 3110G and 3110X include the 10/100/1000 Ethernet ports or the 10-Gigabit Ethernet module slot, console port, StackWise Plus ports, release latch, and the switch module LEDs shown in Figure 1-1 and described on the following pages.

*Figure 1-1 Catalyst Switch Module 3110G and 3110X*

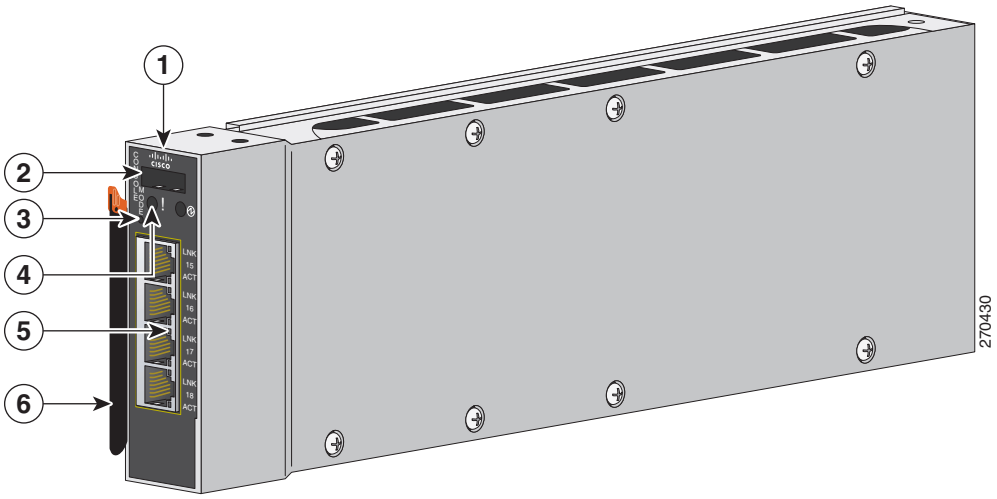



| | | | |
|---|---|---|---|
| **1** | Catalyst Switch Module 3110G | **6** | 10/100/1000 Ethernet ports |
| **2** | Catalyst Switch Module 3110X | **7** | Switch module LEDs |
| **3** | 10-Gigabit Ethernet module slot[1] | **8** | Mode button |
| **4** | StackWise Plus ports | **9** | Console port |
| **5** | Release latch | | |

1. For use with Cisco X2 transceiver modules.

The Catalyst Switch Module 3012 includes the 10/100/1000 Ethernet ports, console port, release latch, and the switch module LEDs shown in Figure 1-2 and described on the following pages.

*Figure 1-2 Catalyst Switch Module 3012*




| | | | |
|---|---|---|---|
| **1** | Catalyst Switch Module 3012 | **4** | Switch module LEDs |
| **2** | Console port | **5** | 10/100/1000 Ethernet ports |
| **3** | Mode button | **6** | Release latch |

# 10/100/1000 Ethernet Ports

The Catalyst Switch Module 3110G and 3012 10/100/1000 Ethernet ports use standard RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX and 1000BASE-T traffic requires Category 5, Category 5e, or Category 6 unshielded twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

For information about the 10/100/1000 Ethernet port connections and specifications, see the "Connecting Devices to the Ethernet Ports" section on page 2-13 and Appendix B, "Connector and Cable Specifications."

# 10-Gigabit Ethernet Module Slot

The Catalyst Switch Module 3110X 10-Gigabit Ethernet module slot is used for an uplink connection to other switches and routers. The module slot operates in full-duplex mode and uses the hot-swappable Cisco X2 transceiver modules.

The X2 transceiver modules have a dual SC/PC connector (-SR, -LX4) or an Infiniband 4x connector (-CX4) for connections to multimode fiber (MMF), single-mode fiber (SMF), or 4x Infiniband cable.

These are the supported Cisco X2 transceiver modules:

- X2-10GB-SR
- X2-10GB-CX4
- X2-10GB-LX4

For information about installing a transceiver module, see the "Installing Devices in the 10-Gigabit Ethernet Slot" section on page 2-11. For cable specifications, see Appendix B, "Connector and Cable Specifications."

# Port Numbering

Table 1-2 describes the switch module port numbering.

***Table 1-2 Switch Module Port Numbering***

| Port | Description |
|---|---|
| Ports 1 to 14[1] | Internal Gigabit Ethernet 1000BASE-X downlink ports that connect to the blade enclosure. |
| Ports 15 to 18 (Catalyst Switch Module 3110G and 3012) | External 10/100/1000BASE-T copper Gigabit Ethernet uplink ports. |
| Port 1 (X2) (Catalyst Switch Module 3110X) | External 10-Gigabit Ethernet module slot. |

1. The number of internal ports is determined by the blade enclosure model. See the blade enclosure documentation for more information about internal port numbering.

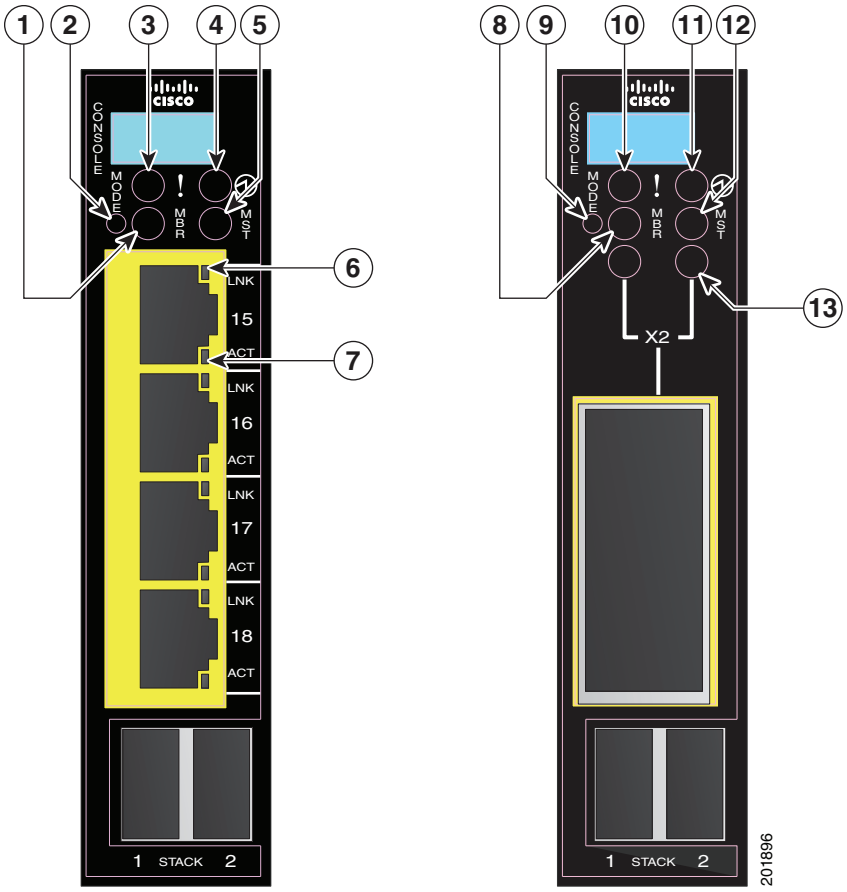
# Internal 100BASE-T Ethernet Management Port

The internal Ethernet management port (Fa0) is used only for switch module management traffic, not for data traffic. It is connected to the IBM advanced Management Module (aMM) through the blade enclosure backplane connector. Traffic to and from this port is isolated from the switch module ports. This port only supports autonegotiation with 100 Mb/s and full-duplex mode.

# Switch Module LEDs

You can use the switch module LEDs to monitor switch module activity. Figure 1-3 shows the switch module LEDs and the Mode button that you use to activate the different modes.

*Figure 1-3 Switch Module LEDs and Mode Button*




| | | | |
|---|---|---|---|
| **1** | Stack member LED<br>(Catalyst Switch Module 3110G) | **8** | Stack member LED |
| **2** | Mode button | **9** | Mode button |
| **3** | Fault/stack mode LED<br>(Catalyst Switch Module 3110G)<br><br>Fault LED<br>(Catalyst Switch Module 3012) | **10** | Fault/stack mode LED |
| **4** | System power LED | **11** | System power LED |
| **5** | Stack master LED<br>(Catalyst Switch Module 3110G) | **12** | Stack master LED |
| **6** | Port link LED | **13** | X2 port status LEDs |
| **7** | Port activity LED | | |

## Mode Button

The fault/stack or stack member LEDs are selected by using the Mode button. If the mode LED for a particular mode is solid green, that mode is currently selected, and the other mode LEDs are off (only Catalyst Switch Module 3110G and 3110X).

To select or change a mode, use a small pointed object to press the Mode button until the desired mode is selected.

## System Power LED

The system power LED shows whether the system is receiving power and is functioning properly. Table 1-3 lists the LED colors and their meanings.

*Table 1-3 System LED*

| Color | System Status |
|---|---|
| Off | Switch module is not powered on. |
| Green | Switch module is operating normally. |
| Amber | Switch module is receiving power but is not functioning properly. |
| Blinking green | Switch module is running the power-on self-test (POST). |

## Stack Master LED

The stack master LED shows the stack master status. Table 1-4 lists the LED colors and their meanings (only Catalyst Switch Module 3110G and 3110X).

*Table 1-4 Stack Master LED*

| Color | Description |
|---|---|
| Off | Switch module is not the stack master. |
| Green | Switch module is the stack master or a standalone switch. |
| Amber | An error occurred during stack master election, or another type of stack error occurred. |

## Fault/Stack Mode LED

The fault/stack mode LED shows either a fault condition or the switch stack status, depending on the Mode button selection. When the switch module is not stacked and there is no fault, the LED is off. If the switch module is stacked and the stack mode LED is selected, the stack member LED is active. Table 1-5 lists the LED colors and their meanings (only Catalyst Switch Module 3110G and 3110X).

*Table 1-5 Fault/Stack Mode LED*

| Color | Fault Mode Description | Stack Mode Description |
|---|---|---|
| Off | No switch module faults. | Stack mode is not selected. |
| Green | — | Switch stack mode is selected. When this LED is green, the stack member LED displays the stack membership number, and the port LEDs display link status. |
| Amber | Switch module fault detected. | — |

## Fault LED

The fault LED shows the switch module fault condition. Table 1-6 lists the LED colors and their meanings (only Catalyst Switch Module 3012).

*Table 1-6 Fault LED*

| Color | Fault Mode Description |
|---|---|
| Off | No switch module faults. |
| Amber | Switch module fault detected. |

## Stack Member LED

The stack member LED is active when the switch module is stacked and you select by using the Mode button. The stack member LED blinks the number of times equal to the switch stack membership number. Table 1-7 lists the LED colors and their meanings (only Catalyst Switch Module 3110G and 3110X).

*Table 1-7 Fault/Stack Mode LED*

| Color | Description |
|---|---|
| Off | Stack mode is not selected, or the switch module is not stacked. |
| Blinking green | Stack member number. |

## Port LEDs

The Catalyst Switch Module 3110G and 3012 port LEDs show interface activity and link status. Table 1-8 lists the LED colors and their meanings.

*Table 1-8 Catalyst Switch Module 3110G and 3012 Port LEDs*

| Activity LED Color | Link Status LED Color | Description |
|---|---|---|
| Off | Off | No link, or port was administratively shut down. |
| Off | Green | Link present, or the port might be blocked by Spanning Tree Protocol (STP) and is not forwarding data. |
| Blinking green or off | Blinking green | Activity. Port is sending or receiving data. |

When stack mode is selected on a Catalyst Switch Module 3110G, port 4 activity and link LEDs show the status for StackWise Plus ports 1 and 2, respectively. The other port LEDs are off. Table 1-9 lists the LED colors and their meanings.

*Table 1-9 Catalyst Switch Module 3110G Port LEDs with Stack Mode Selected*

| Color | Activity LED Description | Link Status LED Description |
|---|---|---|
| Off | No link. | No link. |
| Green | Switch stack link is active. | Switch stack link is active. |

The Catalyst Switch Module 3110X port status LEDs show interface activity and link status. (The LEDs combine to display status when an X2 transceiver is inserted.) Table 1-10 lists the LED colors and their meanings.

*Table 1-10 Catalyst Switch Module 3110X Port LEDs*

| Color | LED Description |
|---|---|
| Off | No link, or port was administratively shut down. |
| Green | Link present. |
| Blinking green | Activity. Port is sending or receiving data. |
| Amber | Port is blocked by STP and is not forwarding data, or port was administratively shut down. |
| Alternating green-amber | Link fault. |

When stack mode is selected on a Catalyst Switch Module 3110X, the two port status LEDs show the status for StackWise Plus ports 1 and 2, respectively. Table 1-11 lists the LED colors and their meanings.

*Table 1-11 Catalyst Switch Module 3110X Port Status LEDs with Stack Mode Selected*

| Color | Port Status LED Description |
|---|---|
| Off | No link. |
| Green | Switch stack link is active. |

## StackWise Plus Ports

The switch module ships with a 1-meter StackWise Plus cable that you can use to connect the StackWise Plus ports (only Catalyst Switch Module 3110G and 3110X).

**Caution** Use only approved cables and connect only to Catalyst Switch Module 3110G and 3110X. Equipment might be damaged if connected to nonapproved Cisco cables or equipment.

You can order these StackWise Plus cables from your supplier:

- CAB-STK-E-0.5M= (0.5-meter cable)
- CAB-STK-E-1M= (1-meter cable)
- CAB-STK-E-3M= (3-meter cable)

## Console Port

You can connect the switch module to a host such as a PC, workstation, or a terminal server through the console port (shown in Figure 1-1). Use the supplied USB-to-DB-9 cable to connect the switch module to a host.

For more information about the console port, see the switch module getting started guide, the software configuration guide, and the command reference on Cisco.com.

# Management Options

The switch module offers several management options:

- Cisco IOS CLI

  The switch module command-line interface (CLI) is based on Cisco IOS software and is enhanced to support desktop-switching features. You can fully configure and monitor the switch module and switch stack members from the CLI. You can access the CLI by connecting your management station directly to the switch module console port or by using Telnet from a remote management station. See the switch module getting started guide, the software configuration guide, and the command reference on Cisco.com for more information.

- BladeCenter Advanced Management Module

  For standalone switch modules, you can use the aMM to configure the switch module. See the *IBM BladeCenter Advanced Management Module User's Guide* for more information. For stacked switches, use the CLI to configure and manage the switch stack.

- IBM Director

  For standalone switch modules, you can use the IBM Director to view the hardware configuration of remote systems, monitor the usage and performance of critical components, centrally manage individual or large groups of IBM and non-IBM Intel®-processor-based servers, desktop computers, workstations, and mobile computers on a variety of platforms. See the IBM documentation for more information.

- Device manager

  You can use the device manager, which is in the switch module memory, to manage standalone switch modules and switch stacks. This web interface offers quick configuration and monitoring. You can access the device manager from anywhere in your network through a web browser. For more information, see the getting started guide and the device manager online help.

- Cisco Network Assistant

  Cisco Network Assistant is a PC-based network management GUI application optimized for LANs of small and medium-sized businesses. Cisco Network Assistant offers centralized management of Cisco switches ranging from the Catalyst Express 500 through the Cisco Catalyst 4506. Through a GUI, users can configure and manage standalone switch modules and switch stacks. Cisco Network Assistant is available at no cost and can be downloaded from this URL:

  http://www.cisco.com/go/cna_doc

  For information on starting the Network Assistant application, see the *Getting Started with Cisco Network Assistant* guide on Cisco.com.

- SNMP network management

  You can manage switch modules from a SNMP-compatible management station. The switch module supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. See the switch module software configuration guide on Cisco.com and the documentation that came with your SNMP application for more information.

- CiscoWorks application

  The CiscoWorks device-management application displays the switch module image that you can use to set configuration parameters and to view switch module status and performance information. The CiscoView application, which you purchase separately, can be a standalone application or part of a Simple Network Management Protocol (SNMP) platform. See the CiscoView documentation for more information.

# Network Configurations

See the switch module software configuration guide on Cisco.com for network configuration concepts and examples of using the switch module to create dedicated network segments and interconnecting the segments through Gigabit Ethernet connections.